

Application No. 09/786,173

REMARKS

Claims 1-23 are pending. By this Amendment, claims 1, 4, 6-8, 10, 11, and 15 are amended. No claims are canceled and no new claims are added.

Claim 1 has been amended to recite the step of globally optimizing the values of all the movement vectors of the initial model or a final model according to a differential method to refine the initial model or the final model, in combination with the other recited steps of the claim. Support for this amendment can be found in the specification as filed at, for example, page 3, lines 15-18, and page 6, line 16-page 9, line 14. Additionally, claims 1, 4, 6-8, 10, 11, and 15 have been amended to remedy various minor informalities. No new matter has been added and no narrowing amendments are intended.

*Allowable Subject Matter*

Applicants note, with thanks, the Examiner's indication that claims 7, 8, and 11 are objected to as being dependent upon a rejected base claims, but that the claims would be allowable if rewritten in independent form including all of the limitation of the base claim and any intervening claim. Applicants further note the withdrawal of the indicated allowability of claim 15, and appreciate the Examiner's close attention to the claims.

*Claim Rejections – 35 U.S.C. § 103*

Claims 1-6, 9, 10, and 19-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,751,365 to Yokoyama (hereinafter Yokoyama) in view of Richard Szeliski & Heung-Yeung Shum, *Motion Estimation with Quadtree Splines*, IEEE TRANSACTION ON PATTERN ANALYSIS AND MACHINE INTELLIGENCE 1199 (1996) (hereinafter Szeliski). Claims 12-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yokoyama and Szeliski, as applied to claim 1, and further in view of U.S. Patent No. 5,390,437

Application No. 09/186,173

to Takahashi et al. (hereinafter Takahashi). Insofar as the rejections apply to the amended claims, the rejections are respectfully traversed.

Applicant respectfully submits that a *prima facie* case of obviousness has not been established. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references when combined must teach or suggest all the claim limitations. MPEP §§ 2142 and 2143. At least because (1) there is no motivation to combine the reference teachings, and (2) the cited references, when combined, do not teach or suggest all of the claim limitations, a *prima facie* case of obviousness has not been established.

With respect to claim 1, the Office Action states that, at the time the invention was made, a person of ordinary skill in the art would have been motivated to repeat steps (b), (c), and (d) in Yokoyama as taught by Szeliski because Szeliski teaches in § 8, page 1207, that repeating the steps (b), (c), and (d) as taught by Yokoyama can minimize the prediction error, and additionally that Yokoyama at column 11, lines 46-50, teaches that various changes to improve the system are welcomed.

There is no motivation to combine the teachings of Szeliski and Yokoyama because the combination would be incompatible and therefore inoperative. Yokoyama teaches heterogeneous structures by introducing representative points and uses a method based upon block matching (for example, FIGS. 2A-3J and 5A-5J; column 7, lines 17-22), whereas Szeliski teaches a homogeneous structure for the motion estimation method and "impose[s] the condition that the spine control grid is a regular subsampling of the pixel grid . . . so that each set of  $m \times m$  pixels corresponds to a signal spline patch" (§ 4, page 1201). Accordingly, there is not motivation to combine the teachings of Szeliski and Yokoyama at least because of the incompatibility of the methods respectively taught by each Szeliski and Yokoyama.

Application No. 09/786,173

Applicants also respectfully submit that the citation of column 11, lines 46-50, of Yokoyama in the Office Action is irrelevant to the requisite motivation to combine the cited references as suggested. In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference[s] before him to make *the proposed* substitution, combination, or other modification." *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972) (emphasis added). The "teaching" of Yokoyama at column 11, lines 46-50, is not sufficient to make the combination suggested in the Office Action, as it is general, making no reference to the suggested modification, and is therefore not a teaching sufficient for one of ordinary skill to make *the proposed* combination.

The cited references, when combined, also do not teach or suggest all of the limitations of amended claim 1, which recites the step of globally optimizing the values of all the movement vectors of the initial model or a final model according to a differential method to refine the initial model or the final model, in combination with the other steps of the claim. Yokoyama teaches that, in the representative point arrangement setting means 301, the representative points are arranged at predetermined positions in an image (column 6, lines 14-16). Each node is estimated according to neighboring nodes. The Office Action asserts that a block matching algorithm cited at column 7, line 20, and an affine transformation cited at column 8, line 9, of Yokoyama disclose this step. The block matching algorithm and affine transformation taught by Yokoyama, however, define various meshing geometries, rather than teaching or suggesting the global optimization step recited in amended claim 1.

Szeliski also does not teach or suggest the step of globally optimizing the values of all the movement vectors of the initial model or the final model according to a differential method to refine the initial model or the final model, as recited in claim in combination with the

Application No. 09/1186,173

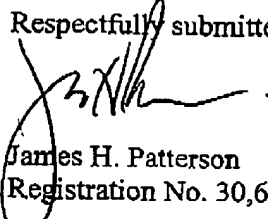
other steps of the claim. Szeliski teaches that only new nodes are submitted to a differential optimization. Although Takahashi was not cited with respect to claim 1, Takahashi also does not teach or suggest the method recited in amended claim 1.

Therefore, at least for the reasons set forth above, no *prima facie* case of obviousness has been established, and amended claim 1 is allowable over the references cited. Claims 2-23 depend from claim 1 and are therefore also allowable. The rejections of claims 12-18 are respectfully traversed but not expressly argued in light of the allowability of the underlying base claim.

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,

  
James H. Patterson  
Registration No. 30,673

Customer No. 24113  
Patterson, Thuent, Skaar & Christensen, P.A.  
4800 IDS Center  
80 South 8th Street  
Minneapolis, Minnesota 55402-2100  
Telephone: (612) 349-5741